Device/User Interface Software Requirements For Optrax SS300-3S Analog Matrix Switch

Version 1.0

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1.0 Introduction

This document provides device and user interface requirements for the Optrax SS300-3S Analog Matrix Switch.

2.0 Required Functionality

The Optrax SS300-3S is a three-stage analog matrix switch. The three stages are comprised of an input stage, the central stage, and the output stage. The switch's role in the automated tracking station is to route signals from inputs to outputs. One input can be routed to one or more outputs. The switch's inputs are the receivers. The bit synchronizers and the demodulators are the switch's outputs. It can also be used to route test data streams.

The switch will be connected to and controlled by the Data Handling Node. It will be wired, via patch panels, to the input and output devices. The full capabilities of the device will be required by the automated tracking station.

3.0 Parameter Ranges

The parameter ranges will not differ from the device's capabilities.

4.0 Communications Protocol

The switch communicates with the controlling computer using the RS-232 protocol. The switch will be directly connected to the controlling computer with a serial cable.

5.0 GUI Functionality

The user interface will include two interactive windows. The Status/Control window will display the current connections of the switch and provide a mechanism by which the connections can be re-routed. The user will have the ability to turn the Auto-Verification upon making connections on or off. The Settings/Test window will provide options with which the user can initiate Coil Current, One Full Path, and Burn-In tests. It will also include options for setting touch panel modes: Enabled, Sleep, and Debug.

6.0 Command Scripting

See Appendix B: Scripting Requirements

7.0 High-level Status

The switch does not provide any information that is useful as a real-time status, therefore there is no real-time status information to be gathered and displayed. In lieu of a real-time status, the high-level status window will display the input-to-output connections of the switch.

8.0 Replacement Algorithm

There is only one switch therefore it cannot be replaced with a backup.

If a device on the output side of a chain is signaling an error then the switch's connection may be at fault. If the switch indicates a bad connection then the error condition will be brought to the attention of the operator who will have to replace a circuit card.

Future requirement: implement the three-stage algorithm in software. If the switch indicates a bad connection then use the three-stage algorithm to reroute the input to the output through the central stage.

Appendix A: Graphical User Interface Requirements

There is no additional information.

Appendix B: Scripting Requirements

Master	Node	Comments/Error Handling

Resource Request Specific
Parameter: unit number
	Start
	
	Check allocation table for unit number
	
	If available then
	Mark unit as assigned to this Master
	Reply “Unit # assigned”
	Open log file
	Retrieve configuration file from this Master
	Else
	Reply “Unit # not available”
	End
	
	Stop
		There is only one Optrax SS300-3S Analog Matrix Switch. Therefore the request will always be for the same switch.

Resource Request General	Start
	
	Check allocation table for an available unit using the least recently used method
	
	If available then
	Mark unit as assigned to this Master
	Reply “Unit # assigned”
	Open log file
	Retrieve configuration file from this Master
	Else
	Reply “No units available”
	End
	
	Stop	

Setup Parameter: unit number	Start Verify possession of unit by this Master	

Master	Node	Comments/Error Handling

	If not assigned to this Master then
	Inform this Master
	Stop
	End
	
	Load and Verify configuration file
	
	If configuration file error then
	Inform this Master
	Stop
	End
	
	Stop
		>> Operator intervention required
		
		>> Operator intervention required

Start Support Parameter: unit number	Start Verify possession of unit by this Master If not assigned to this Master then Inform this Master Stop End Stop	>> Operator intervention required
Stop Support Parameter: unit number	Start Verify possession of unit by this Master If not assigned to this Master then Inform this Master Stop End Stop	>> Operator intervention required
Takedown Parameter: unit number	Start Verify possession of unit by this Master	

Master	Node	Comments/Error Handling
	If not assigned to this Master then Inform this Master Stop End Mark unit as not assigned Close log file Send log file to this Master Stop	>> Operator intervention required